



Survey on Insect Diversity of Yeonpyeong-do Island, Korea

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Abstract: We tried to investigate the biodiversity in Yeonpyeong-do Island and the relationship between surrounding environment and ecosystem of other Islands, in order to, eventually, contribute to biodiversity conservation as well as to management of West-coastal islands in Incheon, Korea. Insect had been collected at Yeonpyeong-do Island from April to October, 2010. A total of 209 species of 65 families under 10 orders were identified through this study. Therefore, the species composition of insect over each result from Yeonpyeong-do Island was a total of 10 orders, 77 families, 286 species including 1 endangered species, *Lethocerus deyrollei* (Vuillefroy), 3 endermic species, 4 management of exotic species and 43 designated species; 93 species of Lepidoptera (32.51%) which is the highest, 50 species of Coleoptera (17.48%), 37 species of Hymenoptera (12.94%) and 33 species of Homoptera (11.54%).

Keywords: Insect Fauna, Conservation, Management, West-coastal island

Introduction

Yeonpyeong-do (Daeyeonpyeong-do Island) is an islands in the West Sea, belongs administratively to Ongjin-gun, Incheon Metropolitan City and located on 125°41'47" east longitude and 37°40' north latitude. It is located about 80 km west-northward of Incheon and 12 km south-westward of the coast of Hwanghae-do, North Korea. Its total area is 7.29 km² and its coastal line stretches 24.3 km. Tombolo, land-tied island, and tideland was developed at the south-eastern side of the area, sea cliff and pebble beach, at the south-western and northern part, respectively. The forest vegetation of Yeonpyeong-do Island was Cool-Temperature forest type and recognized into five plant communities: *Pineus koraiensis* community, *Carpinus coreanus* community, *Qurucus acutissima* community, *Qurucus dentata* community and *Pinus densiflora* community (NIER, 2007).

The insect fauna of Yeonpyeong-do Island has been studied by NIER (2007). The present studies were directed toward identification of insect from Yeonpyeong-do Island in the hope that the result would offer distinctive information for the biodiversity conservation as well as to management of West-coastal islands in Incheon, Korea.

Investigation Methods

For insect survey of Yeonpyeong-do Island, total 3 times field survey was conducted from April to October, 2010. This research targeted samples caught by installing bait-trap and light-trap, and caught by sifting, sweeping, beating and searching in the areas (Fig. 1). The insect specimens were classified by families under order, and identified and listed in accordance with the 'Check List of Insects from Korea (1994)'.

Results and Discussion

From the surveys, a total 209 species of 65 families under 10 orders were identified from Yeonpyeong-do Island. The most species were reported in 2nd time at S1, 94 species of 41 families under 10 orders. Therefore, the species composition of insect over each result from Yeonpyeong-do Island was a total of 10 orders, 77 families, 286 species including 1 endangered species, *Lethocerus deyrollei* (Vuillefroy), 3 endermic species, 4 management of exotic species and 43 designated species; 93 species of Lepidoptera (32.51%) which is the highest, 50 species of Coleoptera (17.48%), 37 species of Hymenoptera (12.94%) and 33 species of Orthoptera (11.54%) (Table 1, Fig. 1, Appendix). It is thought that the reasons why members of Lepidoptera and Coleoptera were absolutely dominant in the survey are because they are large taxonomic groups and because the methods used to collect the insects, Light Trap and Pit-fall Trap, favored collection of these kinds of insects.

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Fig. 1. The survey sites from Yeonpyeong-do Island.

Table 1. The total number of insect and relative dominance in Yeonpyeong-do Island

Order	Family	Species	Relative Dominance (RD) (%)	Endangered species (EW)		Endermic Species* (ESK)	Management of Exotic Species (MES)	IUCN Red List	Designated Species** (DS)
				Level	Level				
Odonata	3	10	3.50						
Mantodea	1	4	1.40						1
Dermaptera	1	2	0.70						
Orthoptera	8	33	11.54			1			6
Hemiptera	15	32	11.19		1				3
Homoptera	3	4	1.40						
Coleoptera	20	50	17.48						11
Hymenoptera	9	37	12.94						6
Diptera	3	21	7.34			1			14
Lepidoptera	14	93	32.51			1	4		2
10	77	286	100		1	3	4		43

*Endermic Species: NIBR, 2011

**Designated Species: ME and NIER, 2006

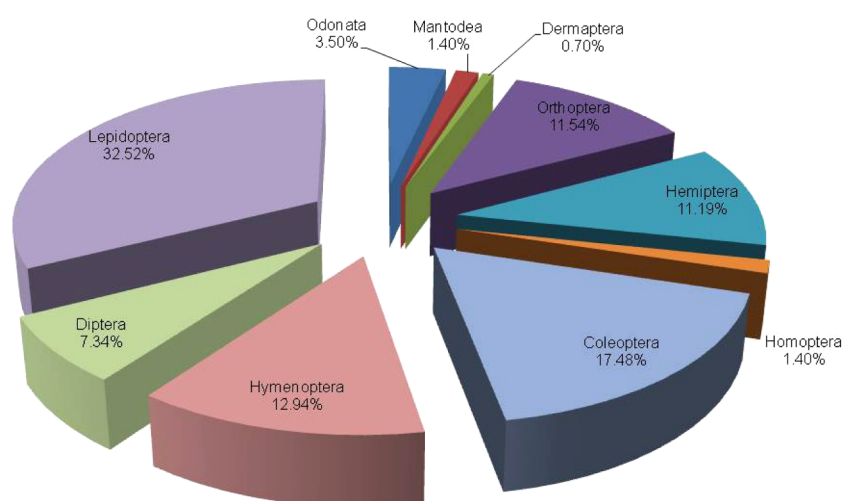


Fig. 2. Taxonomic group composition of the insect in Yeonpyeong-do Island.

We enumerated the 286 species distributed in the Yeonpyeong-do Island by the present study and previous literatures. But it will be necessary the further detailed surveys including seasonal surveys and other methods to

investigate the insects in this area for the biodiversity conservation as well as to management of West-coastal islands in Incheon, Korea.

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Appendix. Taxonomic list of the insect in Yeonpyeong-do Island

	Scientific name	Korean name	Survey											Reference (NIER, 2007)	Remark*
			1st		2nd					3rd					
			S1	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5		
	Odonata	잠자리목													
	Family Aeshnidae	왕잠자리목													
1	<i>Anax parthenope julius</i> Brauer	왕잠자리			1		1	3	1	1					
	Family Coenagrionidae	실잠자리목													
2	<i>Cercion hieroglyphicum</i> (Brauer)	등줄실잠자리			1			2							
3	<i>Ischnura asiatica</i> (Brauer)	아시아실잠자리			2			1							
	Family Libellulidae	잠자리목													
4	<i>Orthetrum albistylum speciosum</i> (Uhler)	밀잠자리			1										
5	<i>Pantala flavescens</i> (Fabricius)	된장잠자리	10	10	10	10	10	1	1	1			3		
6	<i>Sympetrum croceolum</i> Selys	노란잠자리			1										
7	<i>Sympetrum darwinianum</i> (Selys)	여름좀잠자리				1									
8	<i>Sympetrum depressiusculum</i> (Selys)	고추좀잠자리			1					1					
9	<i>Sympetrum infuscatum</i> (Selys)	깃동잠자리				2		1	1						
10	<i>Sympetrum parvulum</i> Bartenef	애기좀잠자리						1							
	Mantodea	사마귀목													
	Family Mantidae	사마귀목													
11	<i>Mantis religiosa</i> (Linné)	황라사마귀												○	DS
12	<i>Statilia maculata</i> (Thunberg)	좀사마귀						1					1	○	
13	<i>Tenodera angustipennis</i> Saussure	사마귀			2				1	1	1			○	
14	<i>Tenodera aridifolia</i> (Stoll)	왕사마귀			1				1		1			○	
	Dermaptera	집게벌레목													
	Family Anisolabididae	민집게벌레목													
15	<i>Anisolabis maritima</i> (Bonelli)	민집게벌레							2			1		○	
16	<i>Euborellia pallipes</i> (Shiraki)	노랑다리집게벌레	1	3											
	Orthoptera	메뚜기목													
	Family Tettigoniidae	여치목													
17	<i>Conocephalus chinensis</i> (Redtenbacher)	썩새기												○	DS
18	<i>Conocephalus gladiatus</i> (Redtenbacher)	긴꼬리썩새기												○	
19	<i>Conocephalus maculatus</i> (Le Guillou)	점박이썩새기												○	
20	<i>Ducetia japonica</i> (Thunberg)	줄베짱이												○	
21	<i>Euconocephalus varius</i> (Walker)	좀매부리												○	
22	<i>Gampsocleis ussuriensis</i> Adelung	긴날개여치												○	
23	<i>Hexacentrus japonicus</i> Karny	베짱이												○	
24	<i>Phaneroptera falcata</i> (Poda)	실베짱이												○	DS
25	<i>Phaneroptera nigroantennata</i> Brunner	검은다리실베짱이			3									○	
26	<i>Ruspolia jezoensis</i> (Matsumura et Shiraki)	애매부리												○	
27	<i>Ruspolia lineosa</i> (Walker)	매부리												○	
	Family Oecanthidae	긴꼬리목													
	<i>Oecanthus indicus</i> Saussure	긴꼬리			3									○	
	Family Gryllidae	귀뚜라미목													
28	<i>Loxoblemmus arietulus</i> Saussure	알락귀뚜라미												○	
29	<i>Ornebius kanetataki</i> (Matsumura)	어리귀뚜라미												○	
30	<i>Parapteronemobius sazanami</i> Furukawa	바다방울벌레												○	
31	<i>Paratrigonidium bifasciatum</i> Shiraki	풀종다리												○	
32	<i>Polionemobius mikado</i> (Shiraki)	좀방울벌레												○	
33	<i>Teleogryllus emma</i> (Ohmachi et Matsumura)	왕귀뚜라미		1	1	4								○	
34	<i>Velarifictorus aspersus</i> (Walker)	귀뚜라미				3			1	3	1	4			DS
35	<i>Velarifictorus mikado</i> (Saussure)	극동귀뚜라미												○	
	Family Rhaphidophoridae	뽕등이목													
36	<i>Diestrammena asynamora</i> (Adelung)	알락뽕등이												○	DS
37	<i>Diestrammena coreana</i> (Yamasaki)	뽕등이												○	
	Family Gryllotalpidae	땅강아지목													
38	<i>Gryllotalpa orientalis</i> (Burmeister)	땅강아지									1			○	
	Family Pyrgomorphidae	섬서구메뚜기목													
39	<i>Atractomorpha lata</i> (Motschulsky)	섬서구메뚜기					1		1					○	

Appendix. Continued

	Scientific name	Korean name	Survey										Reference (NIER, 2007)	Remark*	
			1st		2nd					3rd					
			S1	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5		
	Family Tetrigidae	모메뚜기과													
40	<i>Tetrix japonica</i> (Bolivar)	모메뚜기												○	
	Family Acrididae	메뚜기과													
41	<i>Acrida cinerea cinerea</i> (Thunberg)	방아깨비		1					1				1	○	DS
42	<i>Calliptamus abbreviatus</i> Ikonnikov	한국땅딸보메뚜기												○	
43	<i>Gastrimargus marmoratus</i> (Thunberg)	콩중이												○	
44	<i>Gonista bicolor</i> (de Haan)	딱다기												○	
45	<i>Locusta migratoria</i> (Linné)	풀무치								2					DS
46	<i>Oedaleus infernalis</i> Saussure	팔중이		1									1	○	
47	<i>Oxya chinensis sinuosa</i> Mistshenko	우리벼메뚜기												○	ESK
48	<i>Shirakiacris shirakii</i> (Bolivar)	등검은메뚜기												○	
49	<i>Trilophidia annulata</i> Thunberg	두꺼비메뚜기												○	
	Hemiptera	노린재목													
	Family Nepidae	장구애비과													
50	<i>Ranatra unicolor</i> Scott	게아재비							1						
	Family Belostomatidae	물장군과													
51	<i>Lethocerus deyrollei</i> (Vuillefroy)	물장군							1						EW(II)
52	<i>Muljarus japonicus</i> (Vuillefroy)	물자라							1						
	Family Corixidae	물벌레과													
53	<i>Micronecta (Basilionecta) sedula</i> Horváth	꼬마물벌레		3											
	Family Reduviidae	침노린재과													
54	<i>Peirates (Cleptocoris) turpis</i> Walker	검정무늬침노린재						1							
55	<i>Sphedanolestes impressicollis</i> (Stal)	다리무늬침노린재						1							DS
	Family Lygaeidae	긴노린재과													
56	<i>Paromius exiguus</i> (Distant)	흑다리긴노린재		7											
57	<i>Nysius (Nysius) plebejus</i> Distant	애긴노린재		1										○	
	Family Coreidae	허리노린재과													
58	<i>Cletus punctiger</i> (Dallas)	시골가시허리노린재		2				1					1		
59	<i>Hygia (Colpura) lativentris</i> (Motschulsky)	떼허리노린재	4						1						
	Family Alydidae	호리허리노린재과													
60	<i>Riptortus clavatus</i> (Thunberg)	톱다리개미허리노린재											1		
	Family Cydnidae	땅노린재과													
61	<i>Macroscytus japonensis</i> Scott	땅노린재	1								1				
	Family Pentatomidae	노린재과													
62	<i>Carbula putoni</i> (Jakovlev)	가시노린재		3										○	
63	<i>Dolycoris baccarum</i> (Linné)	알락수염노린재		6											
64	<i>Eurydema gebleri</i> Kolenati	북쪽비단노린재												○	
65	<i>Halyomorpha halys</i> (Stal)	썩덩나무노린재				5		2		2	1		1	○	DS
66	<i>Plautia stali</i> Scott	갈색날개노린재												○	
	Family Plataspididae	알노린재과													
67	<i>Megacopta punctatissima</i> (Montandon)	무당알노린재											1		
	Family Acanthosomatidae	뿔노린재과													
68	<i>Sastragala esakii</i> Hasegawa	에사키뿔노린재						1							DS
	Family Malcidae	뿔나무노린재과													
69	<i>Chauliops fallax</i> Scott	계눈노린재(계눈긴노린재)												○	
	Family Coreidae	허리노린재과													
70	<i>Homoeocerus dilatatus</i> Horvath	넓적배허리노린재												○	
	Family Rhopalidae	잡초노린재과													
71	<i>Liorhyssus hyalinus</i> (Fabricius)	투명잡초노린재												○	
72	<i>Rhopalus (Aeschyntelus) maculatus</i> (Fieber)	붉은잡초노린재		2										○	
73	<i>Rhopalus (Aeschyntelus) sapporensis</i> (Matsumura)	삿포로잡초노린재		1										○	
74	<i>Stictopleurus crassicornis</i> (Linné)	흑다리잡초노린재												○	
75	<i>Stictopleurus punctatonervosus minutus</i> Blot	점흑다리잡초노린재		1										○	
	Family Miridae	장님노린재과													
76	<i>Adelphocoris demissus</i> Horvath	목도리장님노린재												○	

Appendix. Continued

	Scientific name	Korean name	Survey										Reference (NIER, 2007)	Remark*
			1st		2nd					3rd				
			S1	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	
77	<i>Adelphocoris suturalis</i> (Jakovlev)	변색장님노린재												○
78	<i>Lygocoris (Apolygus) spinolae</i> (Meyer-Dur)	애무늬고리장님노린재												○
79	<i>Polymerus (Polymerus) pekinensis</i> Horvath	페킨장님노린재												○
80	<i>Probosciodocoris varicornis</i> (Jakovlev)	큰흰숨털검정장님노린재		1										
81	<i>Trigonotylus coelestialium</i> (Kirkaldy)	빨간촉각장님노린재												○
	Homoptera	매미목												
	Family Dictyopharidae	상투벌레과												
82	<i>Dictyophara nakanonis</i> Matsumura	나카노상투벌레		1										
	Family Cicadellidae	매미충과												
83	<i>Bothrogonia japonica</i> Ishihara	끝검은말매미충												○
	Family Cicadidae	매미과												
84	<i>Mogannia hebes</i> (Walker)	참매미					1							
85	<i>Suisha coreana</i> (Matsumura)	늦털매미											1	
	Coleoptera	딱정벌레목												
	Family Carabidae	딱정벌레과												
86	<i>Calosoma inquisitor cyanescens</i> Motschulsky	풀색명주딱정벌레					1							
87	<i>Carabus smaragdinus</i> (Fischer)	홍단딱정벌레		1	1									
	Family Cerambycidae	먼지벌레과												
88	<i>Amara (Celia) chalcophaea</i> Bates	애둥글먼지벌레							1					
89	<i>Amara (Curtonotus) gigantea</i> (Motschulsky)	큰둥글먼지벌레				1								
90	<i>Bradycellus (Lioholus) laeticolor</i> Bates	노란목좁쌀애먼지벌레							50	4		26	18	
91	<i>Calleida (Callidiola) onoha</i> Bates	녹색먼지벌레					1							
92	<i>Chlaenius (Ilaenus) naeviger</i> Morawitz	쌍무늬먼지벌레					2							
93	<i>Chlaenius (Pachydinodes) virgulifer</i> Chaudoir	끝무늬먼지벌레					1							
94	<i>Dolichus halensis</i> (Schaller)	등빨간먼지벌레		2	5	9								
95	<i>Harpalus (Cephalomorphus) capito</i> Morawitz	머리먼지벌레							1					
96	<i>Harpalus (Harpalus) pallidipennis</i> Morawitz	알락머리먼지벌레		10	5	5								
97	<i>Harpalus (Pseudoophonus) coreanus</i> (Tschitschérine)	고려머리먼지벌레		1							2			
98	<i>Harpalus (Pseudoophonus) davidi</i> Tschitschérine	민들머리먼지벌레										1		
99	<i>Nebria (Orientonebria) chinensis chinensis</i> Bates	중국먼지벌레							1					
100	<i>Stenolophus (Stenolophus) connotatus</i> Bates	흑가슴좁쌀먼지벌레					1							
101	<i>Synuchus (Synuchus) cycloderus</i> (Bates)	붉은칠납작먼지벌레		2					18			7	2	
102	<i>Synuchus (Synuchus) melantho</i> (Bates)	검정칠납작먼지벌레							5	3		8		
	Family Brachinidae	폭탄먼지벌레과												
103	<i>Pheropsophus javanus</i> (Dejean)	남방폭탄먼지벌레				1								
	Family Dytiscidae	물방개과												
104	<i>Hyphydrus japonicus</i> Sharp	알물방개		2										
	Family Silphidae	송장벌레과												
105	<i>Silpha perforata perforata</i> Gebler	넓적송장벌레				3								DS
106	<i>Eusilpha (Eusilpha) jakowlewi jakowlewi</i> (Semenov)	큰넓적송장벌레		2		1								DS
	Family Buprestidae	비단벌레과												
107	<i>Trachys minuta</i> (Linné)	버드나무좀비단벌레										1		
	Family Lucanidae	사슴벌레과												
108	<i>Macrodercas rectus rectus</i> (Motschulsky)	애사슴벌레					7						1	
	Family Lampyridae	반딧불이과												
109	<i>Lychmurus rufa</i> (Olivier)	늦반딧불이		6										
	Family Melolonthidae	검정풍뎡이과												
110	<i>Holotrichia morosa</i> Waterhouse	큰검정풍뎡이		1										
111	<i>Holotrichia kiotoensis</i> Brenske	검정풍뎡이					2							
112	<i>Holotrichia niponensis</i> (Lewis)	큰다색풍뎡이		1										
	Family Rutelidae	풍뎡이과												
113	<i>Adoretus tenuimaculatus</i> Waterhouse	주둥무늬차색풍뎡이						1						

Appendix. Contined

	Scientific name	Korean name	Survey										Reference (NIER, 2007)	Remark*	
			1st		2nd					3rd					
			S1	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5		
	Family Cetoniidae	꽃무지과													
114	<i>Pseudotorynorrhina japonica</i> Hope	풍이			1										
	Family Attelabidae	거위벌레과													
115	<i>Aspidobyctiscus lacunipennis</i> (Jekel)	포도거위벌레											○		
	Family Languriidae	방아벌레붙이과													
116	<i>Anadastus praeustus</i> (Crotch)	끝검은방아벌레붙이		1											
	Family Coccinellidae	무당벌레과													
117	<i>Chilocorus kuwanae</i> Silvestri	애홍점박이무당벌레			1									DS	
118	<i>Coccinella (Coccinella) septempunctat</i> Linné	칠성무당벌레		1		1								DS	
119	<i>Harmonia axyridis</i> (Pallas)	무당벌레	1	1										DS	
120	<i>Hippodamia (Hippodamia) tredecimpunctata</i> (Linné)	열석점긴다리무당벌레		1										DS	
121	<i>Propylea japonica</i> (Thunberg)	꼬마남생이무당벌레		1										DS	
	Family Tenebrionidae	거저리과													
122	<i>Uloa latimanus</i> Kolbe	우묵거저리	1												
	Family Cicindelidae	길앞잡이과													
123	<i>Cicindela (Sophiodela) chinensis flammifera</i> Horn	길앞잡이											○		
	Family Rhynchophoridae	왕바구미과													
124	<i>Sipalinus gigas gigas</i> (Fabricius)	왕바구미											○		
	Family Curculionidae	바구미과													
125	<i>Enaptorrhinus granulatus</i> Pascoe	털보바구미											○		
	Family Cerambycidae	하늘소과													
126	<i>Agapanthia pilicornis</i> (Fabricius)	납색초원하늘소											○	DS	
127	<i>Corymbia rubra</i> (Linné)	붉은산꽃하늘소											○	DS	
128	<i>Xylotrechus pyrrhoderus</i> Bates	포도호랑하늘소					1								
	Family Chrysomelidae	잎벌레과													
129	<i>Agelastica coerulea</i> Baly	오리나무잎벌레		1											
130	<i>Aspidomorpha transparipennis</i> (Motschulsky)	모시금자라남생이잎벌레	1												
131	<i>Aulacophora nigripennis</i> Motschulsky	검정오이잎벌레	1	1					1						
132	<i>Basilepta fulvipes</i> (Motschulsky)	금록색잎벌레		1										DS	
133	<i>Linaeidea aenea</i> (Linné)	납색잎벌레											○		
134	<i>Ophraella communis</i> LeSage	돼지풀잎벌레		1											
135	<i>Physosmaragdina nigrifrons</i> (Hope)	밤나무잎벌레											○	DS	
	Hymenoptera	벌목													
	Family Argidae	등에잎벌과													
136	<i>Arge nipponensis</i> Rohwer	왜장미등에잎벌					1							DS	
	Family Chalcididae	수중다리좀벌과													
137	<i>Brachymeria lasus</i> (Walker)	무늬수중다리좀벌		1											
	Family Ichneumonidae	맷시벌과													
138	<i>Trathala flavo-orbitalis</i> (Cameron)	안경꼬마자루맷시벌		2				1							
	Family Eumenidae	호리병벌과													
139	<i>Anterhynchium flavomarginatum</i> Smith	황습감탕벌					1	1					○		
140	<i>Eumenes pomiformis</i> Fabricius	애호리병벌					3						○		
141	<i>Euodynerus dantici</i> Rossi	벌감탕벌											○	DS	
142	<i>Orancistrocerus drewseni</i> (Saussure)	줄무늬감탕벌					1	1						DS	
143	<i>Oreumenes decoratus</i> (Smith)	호리병벌					2						○	DS	
	Family Vespidae	말벌과													
144	<i>Vespa mandarinia</i> Cameron	장수말벌					1					4		DS	
	Family Scolidae	배벌과													
145	<i>Campsomeris (Megacampsemeris) prismatica</i> Smith	금테줄배벌					3								
146	<i>Scolia (Discolia) oculata</i> Matsumura	황띠배벌					1						○		
	Family Sphecoidae	구멍벌과													
147	<i>Ammophila sabulosa infesta</i> Smith	나나니					3								
148	<i>Cerceris supraconica</i> Tsuneki	코주부노래기벌					1								

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	Scientific name	Korean name	Survey															Reference (NIER, 2007)	Remark*
			1st					2nd					3rd						
			S1	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4		
149	<i>Lestica (Ceratocolus) alata basakis</i> F.Sith	황다리은주둥이벌					2												
	Family Apidae	꿀벌과																	
150	<i>Halictus aerarius</i> Smith	구리꼬마꽃벌			1														
151	<i>Xylocopa appendiculata circumvolans</i> Smith	어리호박벌																○	DS
	Family Formicidae	개미과																	
152	<i>Aphaenogaster japonica</i> Forel	일본장다리개미	3									3	1						
153	<i>Camponotus japonicus</i> Mayr	일본왕개미	3	2		4	1					1	1					○	
154	<i>Camponotus vitiosus</i> Ito	도쿄왕개미	2																
155	<i>Crematogaster teranishii</i> Santschi	검정밀들이개미																○	
156	<i>Crematogaster laboriosa</i> Smith	용골등밀들이개미																○	
157	<i>Crematogaster matsumurai</i> Forel	마쓰무라밀들이개미	2	2															
158	<i>Crematogaster osakensis</i> Forel	노랑밀들이개미	5		2						9	3	3			5			
159	<i>Formica japonica</i> Motschulsky	곰개미																○	
160	<i>Hypoponera gleadowi</i> (Forel)	황침개미																○	
161	<i>Lasius flavus</i> (Fabricius)	황개미	5																
162	<i>Lasius japonicus</i> Snatschi	고동털개미																○	
163	<i>Messor aciculatus</i> (Smith)	짱구개미		1							7		3			1			
164	<i>Myrmecina graminicola nipponica</i> Wheeler	가시방패개미	2												1				
165	<i>Pachycondyla chinensis</i> (Emery)	왕침개미	3															○	
166	<i>Pachycondyla javana</i> (Mayr)	일본침개미	3	2	1	9					2	2	1	2	5				
167	<i>Paratrechina flavipes</i> (Smith)	스미스개미	10	5	3	7										3		○	
168	<i>Pheidole fervida</i> (Smith)	극동흑개미	50	50	10	50					10	8	2	50				○	
169	<i>Polyrhachis lamellidens</i> Smith	가시개미																○	
170	<i>Pristomyrmex punctatus</i> Smith	그물등개미	10	5			5				2	2	1			3		○	
171	<i>Strumigenys lewisi</i> Cameron	비늘개미	1																
172	<i>Tetramorium tsushimae</i> Emery	주름개미	100		100													○	
	Diptera	파리목																	
	Family Syrphidae	꽃등예과																	
173	<i>Allobaccha apicalis</i> (Loew)	끝검정알락꽃등예																○	DS
174	<i>Allograpta balteata</i> (de Geer)	호리꽃등예	1	1					6							3		○	DS
175	<i>Allograpta javana</i> (Wiedemann)	차바꽃등예							2									○	
176	<i>Betasyrphus serarius</i> (Wiedemann)	검정넓적꽃등예														1			
177	<i>Eristalis (Eoseristalis) arbustorum</i> (Linné)	덩굴꽃등예										1				3			DS
178	<i>Eristalis (Eoseristalis) cerealis</i> Fabricius	배짚은꽃등예		1														○	DS
179	<i>Eristalis (Eristalis) tenax</i> (Linné)	꽃등예							3	1	10					15			DS
180	<i>Eristalis kyokoae</i> (Kimura)	큰무늬배짚은꽃등예										1				1			DS
181	<i>Helophilus (Helophilus) virgatus</i> Coquillett	수중다리꽃등예														1			DS
182	<i>Melanostoma mellinum</i> (Linné)	광불이꽃등예		3															
183	<i>Metasyrphus frequens</i> Matsumura	물결넓적꽃등예										1							DS
184	<i>Paragus coreanus</i> Shiraki	고려꽃등예							1										
185	<i>Phytomia zonata</i> (Fabricius)	왕꽃등예		2					1										DS
186	<i>Pipiza flavomaculata</i> Matsumura	점꽃등예							1										
187	<i>Sphaerophoria menthastri</i> (Linné)	꼬마꽃등예	1	3														○	DS
188	<i>Syritta pipiens</i> (Linnaeus)	알통다리꽃등예							4										DS
189	<i>Syrphus ribesii</i> (Linné)	좁넓적꽃등예							1										DS
190	<i>Syrphus torvus</i> Osten-Sacken	털좁넓적꽃등예														8			DS
	Family Tephritidae	과실파리과																	
191	<i>Paroxyna sada</i> Dirlbek et Dirlbekova	산알락좁과실파리														1			ESK
192	<i>Xyphosia punctigera</i> (Coquillett)	노랑과실파리																○	
	Family Tephritidae	등예과																	
193	<i>Ptecticus tenebrifer</i> (Walker)	등예등예																○	DS
	Lepidoptera	나비목																	
	Family Drepanidae	갈고리나방과																	
194	<i>Callidrepana patrana</i> (Moore)	금빛갈고리나방					1												
195	<i>Pseudalbara parvula</i> (Leech)	세줄꼬마갈고리나방					1												
196	<i>Oreta pulchripes</i> Butler	노랑갈고리나방					1												

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Scientific name	Korean name	Survey										Reference (NIER, 2007)	Remark*
		1st		2nd					3rd				
		S1	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	
Family Pyralidae		명나방과											
197	<i>Arippe indicator</i> Walker					1							
198	<i>Bradina geminalis</i> Caradja		1										○
199	<i>Cnaphalocrocis medinalis</i> (Guenée)	1	1										○
200	<i>Diasemia accalis</i> (Walker)												○
201	<i>Dichocrocis punctiferalis</i> (Guenée)			1									
202	<i>Endotricha olivacealis</i> (Bremer)												○
203	<i>Glyphodes duplicalis</i> Inoue												○
204	<i>Herpetogramma luctuosalis</i> (Guenée)		1										
205	<i>Hymenia recurvalis</i> (Fabricius)		1			1							○
206	<i>Lamoria glaucalis</i> Caradja												○
207	<i>Maruca testulalis</i> Geyer		1										○
208	<i>Nacoleia chrysorycta</i> (Meyrick)		1										
209	<i>Nomophila noctuella</i> (Denis et Schiffermuller)												○
210	<i>Orthopygia glaucinalis</i> (Linné)												○
211	<i>Palpita nigropunctalis</i> (Bremer)		1										
212	<i>Pionea fentoni</i> (Butler)		1										
213	<i>Pleuroptya balteata</i> (Fabricius)		1										
Family Geometridae		자나방과											
214	<i>Chlorissa anadema</i> (Prout)					1							
215	<i>Heterolocha laminaria</i> (Herrich-Schäffer)					1							
216	<i>Alcis angulifera</i> (Butler)	2											
217	<i>Hemistola tenuilinea</i> (Alphéraky)			1									
218	<i>Comibaena delicatior</i> (Warren)					1							
219	<i>Ecliptopera umbrosaria</i> (Motschulsky)		1										
220	<i>Hypomecis punctinalis</i> (Scopoli)												○
Family Bombycidae		누에나방과											
221	<i>Bombyx mandarina</i> (Moore)		1										DS
Family Sphingidae		박각시과											
222	<i>Macroglossum bombylans</i> Boisduval												○
223	<i>Macroglossum pyrrhosticta</i> Butler											1	
224	<i>Macroglossum stellatarum</i> (Linné)								1				
225	<i>Rhagastis mongoliana</i> (Butler)		1										
226	<i>Theretra japonica</i> (Boisduval)		1										
Family Arctiidae		불나방과											
227	<i>Eilema griseola</i> (Hübner)		1										
Family Noctuidae		밤나방과											
228	<i>Adris tyrannus</i> (Guenée)									1			DS
229	<i>Anomis mesogona</i> (Walker)		5										
230	<i>Artena dotata</i> (Fabricius)		1										
231	<i>Athetis albisignata</i> (Oberthur)												○
232	<i>Axylia putris</i> (Linné)		1										
233	<i>Catocala actaea</i> Felder et Rogenhofer					1							
234	<i>Chrysodeixis eriosoma</i> (Doubleday)		1										
235	<i>Ctenoplusia (Acanthoplusia) agnata</i> (Staudinger)		1			1							
236	<i>Dichagyris triangularis</i> (Moore)		1										
237	<i>Dysgonia maturata</i> (Walker)					1							
238	<i>Dysmilichia gemella</i> (Leech)		3										
239	<i>Earias pudicana</i> Staudinger		1										
240	<i>Helicoverpa armigera</i> (Hübner)		1										
241	<i>Herminia tarsicrinalis</i> (Knoch)					1							
242	<i>Hypena (Pomolocha) bicoloralis</i> Graeser					1							
243	<i>Hypena nigrobasalis</i> (Herz)		1										
244	<i>Mocis annetta</i> (Butler)		1										
245	<i>Naranga aenescens</i> Moore		1										

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	Scientific name	Korean name	Survey										Reference (NIER, 2007)	Remark*	
			1st		2nd					3rd					
			S1	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5		
246	<i>Niphomys segregata</i> (Butler)	영경귀밤나방												○	
247	<i>Spirama retorta</i> (Clerck)	태극나방												○	
248	<i>Xestia c-nigrum</i> (Linné)	씨자무늬거세미나방		1											
249	<i>Zanclognatha fumosa</i> (Butler)	지옥수염나방					1								
	Family Tortricidae	잎말이나방과													
250	<i>Grapholita delineaana</i> Walker	내줄애기잎말이나방												○	
	Family Yponomeutidae	집나방과													
251	<i>Plutella xylostella</i> (Linné)	배추좀나방												○	
	Family Hesperidae	팔랑나비과													
252	<i>Parnara guttata</i> (Bremer et Grey)	줄점팔랑나비		10	10	10	10	10		2			5	○	
253	<i>Daimio tethys</i> (Ménétrières)	왕자팔랑나비		1										○	
	Family Papilionidae	호랑나비과													
254	<i>Atrophaneura alcinous</i> (Klug)	사향제비나비					1							○	
255	<i>Papilio bianor</i> Cramer	제비나비					1							○	
256	<i>Papilio machaon</i> Linné	산호랑나비					1								
257	<i>Papilio macilentus</i> Janson	긴꼬리제비나비												○	
258	<i>Papilio xuthus</i> Linné	호랑나비		1			5						1	○	
	Family Pieridae	흰나비과													
259	<i>Artogeia melete</i> (Ménétrières)	큰줄흰나비					1							○	
260	<i>Artogeia rapae</i> (Linné)	배추흰나비							1	1	1		1	○	
261	<i>Colias erate</i> (Esper)	노랑나비		2					1	1	1		1	○	
262	<i>Eurema laeta</i> (Boisduval)	극남노랑나비												○	
	Family Lycaenidae	부전나비과													
263	<i>Celastrina argiolus</i> (Linné)	푸른부전나비		2			4							○	
264	<i>Everes argiades</i> (Pallas)	암먹부전나비		1			7			1				○	
265	<i>Favonius orientalis</i> (Murray)	큰녹색부전나비												○	
266	<i>Lycaena dispar</i> (Haworth)	큰주홍부전나비		1											MES
267	<i>Lycaena phlaeas</i> (Linné)	작은주홍부전나비												○	
268	<i>Pseudozizeeria maha</i> (Kollar)	남방부전나비					2			3	1		1	○	
269	<i>Rapala caerulea</i> (Bremer et Grey)	범부전나비												○	
	Family Nymphalidae	네발나비과													
270	<i>Argynnis paphia</i> (Linné)	은줄표범나비												○	
271	<i>Argyreus hyperbius</i> (Linné)	암끝검은표범나비					1			2	1			○	
272	<i>Argyronome laodice</i> (Pallas)	흰줄표범나비												○	
273	<i>Clossiana selene</i> (Schifferrmuller)	작은은점선표범나비												○	MES
274	<i>Cyntia cardui</i> (Linné)	작은멋쟁이나비											1	○	
275	<i>Damora sagana</i> (Doubleday)	암검은표범나비					1								
276	<i>Hestina assimilis</i> (Linné)	홍점알락나비												○	MES
277	<i>Kaniska canace</i> (Linné)	청띠신선나비											1		
278	<i>Lethe diana</i> (Butler)	먹그늘나비												○	
279	<i>Limenitis doerriesi</i> Staudinger	제이줄나비												○	
280	<i>Limenitis helmanni</i> Lederer	제일줄나비												○	ESK, MES
281	<i>Mycalesis gotama</i> Moore	부처나비		1										○	
282	<i>Neptis pryri</i> Butler	별박이세줄나비												○	
283	<i>Neptis sappho</i> (Pallas)	애기세줄나비												○	
284	<i>Polygonia c-aureum</i> (Linné)	네발나비		1	2		6		1	1			1	○	
285	<i>Vanessa indica</i> (Herbst)	큰멋쟁이나비					2		1		1			○	
286	<i>Ypthima motschulskyi</i> (Bremer et Grey)	물결나비					2							○	

*ESK, Endemic species of Korea; EW, Endangered Wild Animals and Plants; MES, Management of Exotic species; DS, Designated species